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Applicant(s): Antonius Henricus Maria Raaijmakers et al.

Serial No.: 09/745,914

NOV 18 2004

For: ELECTRO-OPTICAL DEVICE HAVING AN ITO LAYER, A SiN LAYER
AND AN INTERMEDIATE SILICON OXIDE LAYER

Filed: December 22, 2000

Examiner: Chung, David Y.

Group Art Unit: 2871

Attorney Docket No.: PHN 17,819

REMARKS/ARGUMENTS

Claims 1, 2 and 4 through 6 are pending in the present application. Claims 1 and 4 have been amended hereby.

The Final Office Action (1) maintained a rejection of claims 1 and 2 under 35 U.S.C. 103(a) as being unpatentable over Bird et al. reference (*Large-area image sensing using amorphous silicon nip diodes*, N.C. Bird, C.J. Curling, C. van Berke, Sensors and Actuators A 46-47 (1995) 444-448.) (hereafter "the Bird reference") in view of Japanese Patent No. JP 01-245226 to Tanaka (hereafter "the Tanaka reference"); and (2) likewise maintained a rejection of claims 4 through 6 under 35 U.S.C. 103(a) as being unpatentable over the Bird reference in view of the Tanaka reference and in further view of U.S. Patent No. 5,135,581 to Tran et al. (hereafter "the '581 patent").

With respect to item (1) identified above, the Action states that the Bird reference does not disclose or suggest "an intermediate layer of silicon oxide between the ITO layer and silicon nitride layer so that the switching element is completely shielded". (See Action, P.2, Para.1). The Action then cites the Tanaka reference to overcome the shortcomings associated with the Bird reference arguing that the combination of such references renders the invention defined by claim 1 obvious.

In response, the Applicants respectfully maintain that the cited combination fails at least because the Tanaka reference teaches away from the structure disclosed in the Bird reference as well as the invention defined by present claim 1. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). The Tanaka reference teaches, via the Abstract at least, the production of an active matrix substrate wherein a silicon oxide layer is formed on an ITO layer and formed at the same pattern as the ITO layer. A photoresist is then coated on the silicon

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oxide layer and developed to the shapes of source electrodes, drain electrodes, picture element electrodes and source wirings. This step is followed by the silicon oxide layer then being etched using a solution of hydrofluoric acid with the photoresist as acting as a mask. Next the ITO layer is etched via a ferric chloride solution followed by a silicon nitride layer, as shown in Figs. 1, 2 and 4, being deposited so as to entirely cover, *inter alia*, the picture element electrodes.

Accordingly, taking the Tanaka reference as a whole, Applicants respectfully maintain that that which is disclosed leads or teaches away from that which is disclosed and/or suggested by the Bird reference at least in that the photodiode, as taught by the Bird reference, is such that light can enter a nip stack through the transparent ITO. That is, with reference to Fig. 3 of the Bird reference, the SiN layer does not entirely cover the photodiode (PD), rather the top contact of the photodiode (PD) is exposed so as to allow light to traverse the ITO layer. This structural arrangement is in clear contrast to that which is disclosed and/or suggested by the Tanaka reference wherein the Silicon nitride layer covers entirely at least the picture element electrodes.

Thus, Applicants respectfully submit that the Tanaka reference, which specifically requires that an SiN layer entirely cover at least the picture element electrodes associated with an active matrix substrate, teaches away from that which is provided by the Bird reference. Hence, there is no motivation to combine the cited references. Moreover, the Tanaka reference also teaches away from the invention of claim 1. Accordingly, as the Tanaka reference teaches away from the suggested combination as well as the claimed invention, reconsideration and withdrawal of the stated rejection under 35 U.S.C. 103(a) of claim 1, and allowance thereof, are respectfully requested.

With regard to claim 2, which depends directly from claim 1, it is respectfully submitted that such claim is patentable at least for the reasons discussed above with respect to claim 1. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 2.

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Regarding item (2) identified above, it is respectfully submitted that present claim 4 is patentable over the cited reference combination at least for the reasons discussed above with respect to claim 1. That is, the Tanaka reference specifically teaches away from the invention of present claim 4, which recites a step whereby a top contact of a photosensitive element is made so that light can enter through said ITO layer. Accordingly, reconsideration and withdrawal of the stated rejection of claims 4-6, claims 5 and 6 depending either directly or indirectly from claim 4, and allowance of such claims, are respectfully requested.

In sum, it is respectfully submitted that the cited reference combination fails and moreover that the present pending claims are patentable over such reference combination. Thus, this application is in condition for allowance. Accordingly, reconsideration and withdrawal of all rejections of the claims are respectfully requested.

Respectfully submitted,



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